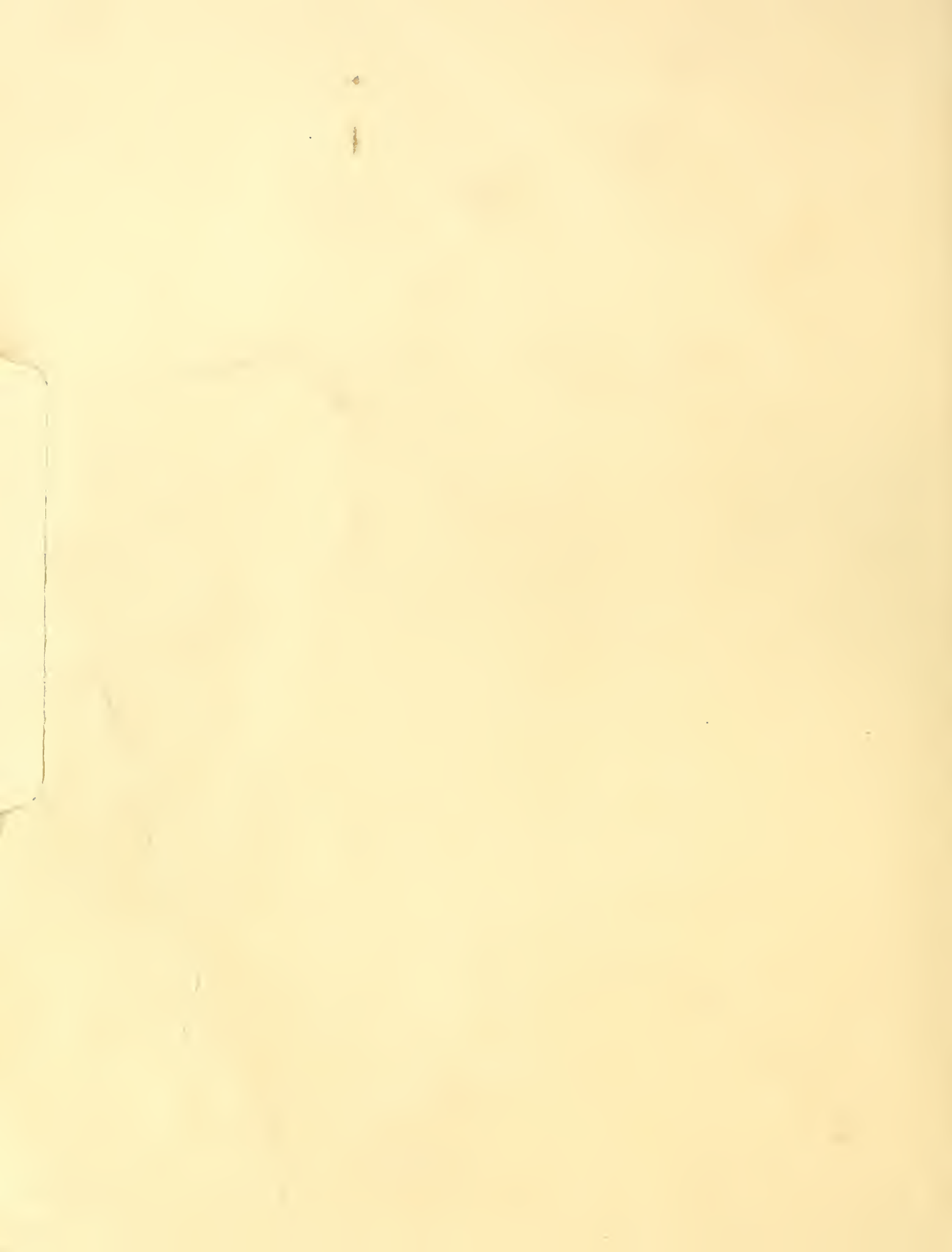


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OUTLOOK & SITUATION

NOTICE

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Table 1.--Feed grains: Marketing year supply, disappearance, area and prices, 1977-82 ^{1/}
(corn, sorghum, oats, barley)

[illegible]

1/ Aggregated data on corn, sorghum, oats, and barley. 2/ The marketing year for corn and sorghum begins October 1; June 1 for oats and barley. 3/ Includes total government loans (original and resale). 4/ Estimated. 5/ Excludes support payment. 6/ Deficiency and disaster payments. 7/ Deficiency, disaster, and diversion payments. 8/ Disaster payments. 9/ Deficiency payments. *The probability is 2 out of 3 that the final outcome will be within this range.

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The *Feed Situation* is published in March, May, August, and November.

Summary

Feed Grain Prices Firm As "Free" Stocks Tighten

Movement of corn and sorghum into the farmer-owned reserve tightened "free" stocks and firmed prices this winter. About 665 million bushels (16.9 million metric tons) of corn and 106 million bushels (2.7 million tons) of sorghum were placed in the reserve from January 1 to March 31, and small quantities have continued to enter during April. Also, corn exports last month were the highest since May 1981, adding price strength.

Enough corn and sorghum are now in reserve, in the government inventory, and under loan that "free" stocks do not appear adequate to meet needs for the rest of the marketing year. Thus, prices likely will rise to pull grain out of loan. The farm price of corn is expected to average \$2.50 for this marketing year, still down sharply from the record \$3.11 last year.

Weather and compliance with the acreage reduction program will influence the feed grain situation this summer and fall. If a large proportion of those who enrolled carry through with acreage reduction, prices should strengthen during 1982/83.

Livestock/feed price ratios favor higher feeding rates and may hold feed use for the rest of the marketing year about equal to last year.

Prospects for reduced corn acreage and a yield below 1981's high will likely pull the U.S. corn crop below last year's record 8.2 billion. However, larger carryin stocks could push 1982/83's supply to 5 percent more than at the start of 1981/82. Most of the stocks will be in the reserve and CCC inventory, and a significant part of the new crop will also likely be eligible for CCC loans and the reserve. Therefore, corn prices are expected to average higher to keep adequate supplies on the market.

Total production of other feed grains this year may be down from last year, with less barley and sorghum more than offsetting an expected small increase in oats. Larger carryin stocks will likely keep total supplies for 82/83 close to the 48.7 million tons available in 1981/82. Higher corn prices and loan rates are expected to strengthen prices for sorghum and barley, but oat prices may average lower.

World coarse grain supplies for 1981/82 are record-large, but trade is off out 3 percent, pushing world ending stocks to the highest level in more than 20 years. Soviet production may recover this year, and prospects are good for record global harvest in 1982/83.

Feed Situation

SITUATION AND OUTLOOK FOR FEED GRAINS

Feed Grain Supply and Utilization

Feed Use Up; Exports Down

Feed grain disappearance totaled 56.4 million metric tons during January-March 1982, compared with 55.6 million last year. Livestock feeding and food and industrial use were larger, but exports were down from a year earlier.

For October-December, 70.9 million tons of feed grains were used. Thus, disappearance for the crop year prior to April totaled 127.3 million tons—slightly more than the 126.6 million used for the same period a year earlier. Feed and residual use was 7.5 million tons larger, but this was offset by a 7.8-million drop in exports. Food and industrial use was about 1 million tons larger than a year ago.

Total use before April represented 46 percent of the total available supply, compared with 52 percent in 1980/81. However, the total supply this year was a near record, while last year's was reduced by drought. The 1979/80 record was only 1.6 million tons larger than the supply for this crop year, and use prior to April represented 48 percent of the available supply 2 years ago. The major difference was in exports—37.0 million tons were exported during October 1979-March 1980, compared with 31.4 million in the current crop year. Feed use was also somewhat higher during 1979/80, but food and industrial use was lower.

Stronger Dollar Contributes To Export Drop

An important factor contributing to lower exports this year, relative to both 1980/81 and 1979/80, is the resurgence of the exchange value of the dollar. The corn-weighted exchange rate of the dollar (the average rate for currencies of countries importing corn from the United States, weighted by the amounts imported) for the first 6 months of this crop year was 33 and 51 percent above the same period of 1980/81 and 1979/80, respectively. Thus, even though the f.o.b. vessel price of corn at Gulf Ports for the first 6 months was 24 percent (\$2.87/\$3.76) below a year earlier and 4 percent (\$2.87/\$3.00) under October-March of 1979/80, importers' costs, in their domestic currency, have been higher this year. Exports to the European Community also have been restricted this year by an increase in the variable import levy on feed grains. In early May, the EC import levies per ton were \$84.55 for barley, \$90.90 for sorghum, and \$93.30 for corn compared with year-earlier levies of \$70.71, \$68.04, and \$69.73, respectively. Financial problems have limited exports to Eastern Europe.

Severe Winter Increased Feed Use

Feed and residual use amounted to 36 million tons the first quarter of 1982—a 12-percent increase over the 32.1

million during January-March 1981. The combination of higher feed use and decreased exports pushed the feed use category to 64 percent of total disappearance, from 58 percent for the corresponding period last year.

The number of grain-consuming animal units on hand this January was about 3.5 percent under those on hand January 1, 1981. However, the grain disappearance for feed and residual use averaged almost 882 million pounds a day for the quarter, compared with 768 million pounds during January-March last year. A more severe winter this year was a major factor underlying increased feeding.

The livestock/feed price ratios, particularly the hog/corn and beef-steer/corn ratios, averaged significantly higher during January-March 1982 than for the corresponding quarter last year. However, the more favorable feeding ratios likely have not had a major impact on feeding rates yet. Nevertheless, the livestock/feed ratios may become even more favorable this spring and early summer and may hold the feeding rate above a year earlier.

Feed grain stocks on April 1 totaled 149 million tons. This is a record April 1 stock position and 27 percent above a year earlier. However, 35.5 million tons of the April 1 stocks were in the farmer-owned reserve (FOR); 20.1 million were under outstanding loans; and 8.4 million were in the CCC inventory. Thus, only 82.3 million tons of feed grains on hand April 1 were readily available to the market. The remaining 66.7 million tons require higher prices before they become available to the market. Of the 117.4 million tons in stocks April 1, 1981, approximately 36.6 million were tied up.

Total use of feed grains during the balance of this marketing year is expected to be 86.6 million tons, compared with 82.9 last year. Feed and residual, and food and industrial use will likely be about the same as last year, but exports are expected to be almost 4 million tons larger. Increased Soviet shipments, smaller harvests in the Southern Hemisphere's exporting countries, particularly Argentina, and weak exports of corn during April-September last year will contribute to the larger exports projected for this year. Therefore, the forecast disappearance will exceed the quantity of April 1 stocks that are readily available implying that feed grain prices will strengthen to induce redemption of some CCC loans.

Corn

Disappearance Down from Last Year

Corn disappearance for January-March this year totaled slightly over 1.8 billion bushels, about 3 percent less than the nearly 1.9 billion bushels a year earlier. January-March use brought disappearance for the first 6 months of this crop year to 4.2 billion bushels, slightly under the 4.3 for the first half of 1980/81.

Feeding and Food Uses Up; Exports Down

Even though grain-consuming units for livestock and poultry this January were down about 3.5 percent from a

year earlier, feed and residual disappearance for corn is estimated to be up about 82 million bushels from a year earlier. Compared with a year ago, livestock prices were higher relative to feed grain prices. However, a more severe winter this year was probably the major factor accounting for the increased feed use—animals required more energy to maintain body temperature.

Food and alcohol use has trended steadily upward over the past 10 years, and this year appears to be no exception. Approximately 150 million bushels of corn were used by these industries during January-March, and almost 330 million were used during the first half of the crop year. This represents a 13-percent increase from the first half of 1980/81.

Exports have become a crucial market outlet for corn producers. For January-March this year, 489 million bushels were exported. This is more than was exported in an entire year 20 years ago but is down 23 percent from the 633 million of January-March last year. For the first half of the current crop year, exports were slightly over 1 billion bushels—down 26 percent from those during October 1980-March 1981. The sharp rise in the exchange rate of the dollar, higher import levies in the European Community, credit problems in Eastern Europe, an economic slowdown in a number of developed countries, and improved harvests in Brazil and Mexico have been important factors in both lower exports and prices this year.

During April, the rate of exports rose relative to last year. So, by April 22, shipments of corn since October 1 totaled almost 1.25 billion bushels, and the decline relative to last year was narrowed to 19 percent. The opening of the Great Lakes/St. Lawrence Seaway is helping the export pace.

About 1,140 million bushels of corn are expected to be exported during the last half of the crop year (April-September). This would bring the total for 1981/82 to 2,175 million bushels—about 8 percent less than the 2,355 million exported during 1980/81. Increased Soviet shipments, decreased production in the Southern Hemisphere's exporting countries, particularly Argentina, and a pickup in demand from the depressed levels of last spring and summer will likely result in a gain in exports during April-September compared with a year earlier.

Prices Firming

Corn prices dropped sharply last fall as the record 8.2-billion-bushel crop was successfully harvested and put into storage. The average farm price during October-December was \$2.39 a bushel. Since then, corn prices have been slowly firming as "free" supplies gradually tightened. Movement of corn into the FOR and under regular loan has isolated a substantial part of the supplies from the market. At the end of October 1981, only about 50 million bushels of 1981-crop corn were tied up in the FOR or under loan, and 175 million bushels from earlier crops were in extended loans. By April 21, more than 1.9 billion bushels were out of the market. The average farm price for January-March was \$2.48 a bushel, and by mid-April, it was \$2.51.

Tight Shortrun Supply in Prospect

Corn stocks on April 1 totaled 5,074 million bushels. For the rest of the marketing year, disappearance in all uses is expected to total almost 3,100 million bushels, leaving 1,976 million in carryover stocks. However, by

late April about 2,256 million bushels were tied up in the FOR, in CCC inventory, or under loan. Consequently, the market will have to pull a significant amount of corn out of loan to meet projected disappearance. Of the 2,256 million bushels cited, almost 682 million are 1981-crop corn under regular loan at \$2.40 a bushel, and around 100 million are from earlier crops under extended loans. Adding interest to the loan, corn prices at the farm likely will have to move to \$2.60 a bushel or higher to pull corn out of loan. The reserve trigger price for the 1981 crop is \$3.15 a bushel. Consequently, if demand were to increase sufficiently to necessitate pulling corn from the reserve, prices would have to rise substantially.

The longer run outlook is subject to considerable uncertainty at the present time. Carryover stocks may be about 90 percent larger than at the beginning of this marketing year. A large part of the carryover will be in the CCC inventory or the FOR, so "free" stocks will be tighter than they were last October. However, farmers with grain in reserve will be allowed to rotate their grain 30 days prior to harvest, thus easing the tight "free" stock situation.

Sorghum

Disappearance Up Sharply

What started out as a record supply year for sorghum is rapidly becoming one of tight market supplies. Disappearance for January-March was 228 million bushels—almost 78 million more than a year earlier. This brings total disappearance for the first half of the marketing year to 527 million bushels and leaves 462 million in April 1 stocks.

Increased feeding has accounted for most of the rise in disappearance over year-earlier figures. Almost 370 million bushels were fed during October-March this crop year. January-March feed use, at 151 million bushels, was 2.4 times larger than the 64 million fed in the same period last year. A severe winter was an important factor accounting for the increased feed use during January-March this year.

Exports for the first 6 months totaled 152 million bushels—8 million more than a year earlier. However, the increase is the result of large October-December exports, because January-March exports of 74 million bushels lagged behind a year earlier by 10 million.

Sorghum "Free" Stocks Tighten

Stocks on hand as of April 1 of this year totaled 462 million bushels. However, 305 million were tied up in the FOR, CCC inventory, or under loan, leaving about 156 million bushels immediately available for market channels.

Sorghum use for April-September is expected to total about 194 million bushels. This implies that almost everything under loan will be needed to provide adequate market supplies for the remainder of the year. However, the supply situation will ease in late August and September as new crop sorghum enters market channels.

The average farm price during January-March was \$2.28 a bushel, the same as the CCC loan price on sorghum. Considering interest costs, the redemption price for sorghum already under loan is almost \$2.50 a bushel. Consequently, prices likely will continue to work higher if use approximates the 194 million bushels projected for the balance of the marketing year.

Barley

Barley Use Rises

Barley use in all channels amounted to 108 million bushels for January-March, bringing total use since June 1981 to 397 million bushels, compared with 358 million during June 1980-March 1981. Use in all major channels (alcoholic beverages, feeding, and exports) exceeded year-earlier levels during both January-March and June-March.

April 1 stocks in all positions totaled 227 million bushels this year. This is 23 million more than a year earlier but is below the April 1 stock position for the years 1978-1980. Barley under loan amounted to 33 million bushels, with 21 million in the reserve and 3.3 million in the CCC inventory. The current farm price is well above the loan price for the 1981 crop. However, prices would have to move higher to hit the release trigger for 1981 barley in the reserve.

Barley Prices Down

The average farm price was \$2.48 for June-March, compared with an average of \$2.82 for the first 10 months of 1980/81. The highest price was received last June, before new-crop barley became available. Prices fell sharply during harvest but then rose seasonally in the fall and early winter. They weakened again in late winter and spring and the mid-April price was near the low for the marketing year to date.

Stocks of barley on hand are sufficient to meet market needs for the remainder of the marketing year and to leave a carryover of about 150 million bushels. Consequently, there appears little likelihood of price strength until this fall, and then prices will depend to a large extent on the size of the 1982 crop and the amount eligible for reserve.

Oats

Stocks Tighten

Stocks of oats were drawn down 128 million bushels during January-March—7 million less than use during the corresponding period last year. Reduced livestock feeding was the primary reason for the smaller disappearance. However, feed use was sufficiently above year-earlier levels during June-December so total disappearance to April 1 exceeded a year earlier by 10 million bushels. The June-March disappearance, at 449 million bushels, amounted to a record-high 66 percent of available supplies and left April 1 stocks at 237 million bushels—the lowest in over 20 years.

During April and May, an additional 80 million bushels likely will be pulled out of storage, leaving a carryover of 156 million. The ratio of ending stocks to use will be the lowest since May 1977.

Prices Strong

The tight supply situation for oats is reflected in market prices. To date, the price at Minneapolis averaged \$2.14 a bushel, 11 cents above the average price during the same period of 1980/81. Oats is the only feed grain to maintain a higher average price this year. This indicates that oats have a unique market (horses and mules)

in which buyers are not greatly responsive to price changes and for which other feed grains are not acceptable substitutes. As long as the available supply of oats does not exceed the requirements of this market by a wide margin, prices can hold above their feeding value for other livestock.

WORLD COARSE GRAIN SITUATION

World Trade Declining in 1981/82

World coarse grain supplies are record-large in 1981/82, and some recovery in use is expected. July-June trade is estimated down 3 percent from the 1980/81 record. The exports of our major competitors are up 9 million metric tons, causing a sharp drop in U.S. shipments.

Imports of the developing countries are estimated down a tenth. Mexico harvested a larger crop and is drawing down stocks. Many other countries, including Brazil, have reduced imports because of foreign exchange and other constraints. Eastern European imports are down over 3 million tons because of hard currency and debt problems. However, crop shortfalls have led to sharply higher imports by Spain and the USSR. Imports of other developed countries may not match 1980/81 levels; livestock industries are depressed, and EC policies discourage use of imported grains.

Reduced crops and restraints on imports are limiting use in many countries in 1981/82. Thus, a 25-million-ton buildup in global stocks is expected. Most of the accumulation will occur in the United States.

Record Supply and Use Foreseen In 1982/83

With recovery anticipated for the Soviet coarse grain crops, a record world harvest is expected next year. The global crop is likely to total between 754 and 804 million tons, and the current estimate is 779 million. Outside the United States and the USSR, production may recover to 1980/81 levels. Small gains are projected for most major areas except Canada.

World use is expected to rebound if the production gains are achieved. In the USSR, use may jump a tenth, in part offsetting likely declines in feed use of wheat in Eastern Europe while supply constraints continue. In the developing countries and China, use will likely recover because of harvest gains and larger imports into the middle-income countries. A 5-percent increase is projected, with sharpest growth in Africa and the Middle East. Little use expansion is expected in the developed countries because only slow recovery is anticipated for livestock industries. No growth in feed use is likely in the EC. Global stocks may expand a tenth or more and the Soviets will likely rebuild stocks.

U.S. Share of World Trade May Recover

World coarse grain trade may increase slightly in 1982/83. Imports of the developing countries are expected to recover, largely because of gains by Mexico and the Middle East. Spain's imports may decline from 1981/82's high volume because of improved crop production, but some gains are projected for the EC and Japan. Soviet imports may decline from their record 1981/82 level, and

Eastern Europe will likely purchase less than in recent years.

Exportable supplies of coarse grains will continue large, but the July-June exports of Argentina and South Africa will decline because of reduced harvest this spring. Thus, the U.S. share of world trade is expected to recover from 1981/82's low 60 percent.

FEED DEMAND

Feed Grains

Livestock and poultry feeding is the major use for feed grains. On a relative basis, its importance has declined during the past decade. Total use of feed grains trended upward by 5 million metric tons a year during 1971-1980 but feed use had no trend during this time. Consequently, feed use as a percent of total disappearance fell from 77 percent in 1971 to 57 percent in 1980. Exports trended upward by almost 5 million tons a year, and food and industrial use by less than a million.

The heterogeneous classes of livestock and poultry consuming domestic feed supplies are aggregated into a measure termed grain-consuming animal units (GCAU). The number of GCAU's fluctuates from year to year but has not exhibited any trend during 1971-1980, consistent with the lack of trend in feed use.

Besides year-to-year fluctuations in the number of grain-consuming units, the feeding rate (amount fed per animal unit) is an additional source of variation in feed use. The feeding rate is in part influenced by the ratio of livestock prices to feed prices. If livestock prices rise relative to feed grain prices, feeders can afford to feed more to each animal even though feed conversion rates decline.

The number of GCAU's represented by current livestock and poultry numbers is down about 3.5 percent from 1980/81. This factor would tend to reduce feed grain disappearance. However, a severe winter increased feed requirements, and 36.2 million metric tons were fed during January-March, a gain of 4.1 tons from a year earlier.

The number of animal units on hand January 1 decreased from a year earlier because of lower hog production and fewer cattle on feed. Since then, new data indicate an even greater cut in hog production, but a rise in the number of cattle on feed. Placements on feed in the 13 major feeding States totaled 5.6 million head during January-March, compared with 4.8 million a year earlier. Consequently, the number on feed April 1 was 2 percent above a year earlier, whereas, on January 1, the number was 8 percent under last year.

The number of feeder cattle outside feedlots on April 1 this year totaled 33.6 million head, slightly under the 34 million on hand last April. Placements on feed in the 13 major States during April-September last year amounted to 11.1 million head. Current feeding margins are conducive to placing cattle on feed, and there is an adequate supply of feeder cattle to increase placements. Consequently, cattle feeding may require more feed grain this spring and summer than during the comparable period last year. Hog production likely won't expand before late winter or next spring at the earliest.

High Protein Feeds

The number of high protein animal units (HPAU) represented by the livestock and poultry population this

year is down about 3 percent from a year earlier. However, with higher feed grain use in sight this year, consumption of high protein concentrates is also expected to rise reflecting a higher use per HPAU. Total use for the feeding year is forecast to be about 22.9 million metric tons, compared with 22.2 million during 1980/81.

Sharply lower prices during January-April this year are also conducive to some increase in use of high protein feeds. The wholesale price of soybean meal at Decatur averaged \$189 a ton this year, compared with \$217 last year. Cottonseed meal at Memphis, at \$160, was \$34 a ton below the year-earlier average of \$194. Meat meal averaged \$210 and fishmeal \$371, compared with \$241 and \$429 a year earlier, respectively.

Hay

The number of roughage-consuming animal units (RCAU) on farms this year is up slightly over 1 percent from a year earlier. Increases in the milking herd, heifers kept for replacement, the beef breeding herd, feeder cattle, and horses and mules accounted for most of the gain.

A lower carryover of hay on May 1, 1981, was more than offset by a larger crop. The supply of hay for May 1981-April 1982 totaled 168.6 million short tons, 2.6 percent above 1980/81. Also, the silage harvest in 1981, at 125 million tons, was up 6 percent from 1980's 118 million.

Although beginning supplies of hay and silage were larger this year, a severe winter resulted in increased feeding of roughage. With the larger number of RCAU's, hay supplies were severely depleted in some areas. Also, a late spring in parts of the country is delaying pasture development and prolonging the period of hay feeding. Hay prices strengthened during January-April with sizable increases occurring in January and April. Hay prices likely will continue high into May and then decline as hay feeding is replaced by green chop and pasture. So far, conditions are favorable for a good hay crop this year.

OUTLOOK FOR 1982/83

Acreage Reduction Program

The market faces an additional uncertainty in the form of farmer participation in the acreage reduction program this year. Last year, no set aside or acreage reduction was necessary to be eligible for program benefits. This year, farmers must reduce plantings 10 percent from their acreage base and put this acreage in a soil conserving practice to be eligible for the the farmer-owned reserve, CCC loans, and other program benefits.

Pre-planting enrollment, which ended April 16, included nearly 75 percent of the corn base, 86 percent of the sorghum base, 87 percent of the barley base, and 60 percent of the oat base. Farmers may change their minds at planting time. Certification of compliance must be made by a specified date in July or August, depending on the locality. In addition to other program benefits, participating corn farmers will be eligible for CCC loans at \$2.55 a bushel and for the FOR at \$2.90. The release price for corn going into the reserve will be \$3.25 a bushel.

Sorghum producers will be eligible for a CCC loan at \$2.42 a bushel and for the FOR at \$2.75. For barley and oats, the loan price is \$2.08 and \$1.31 a bushel, respec-

tively. The loan rate for the FOR is \$2.37 for barley but oats are not eligible for the reserve because the current farm price is above the release trigger price. Consequently, the loan provision of the feed grain program offers little incentive to the oat producer to cut acreage this year.

Production Down, But Total Supplies Up

An early season forecast of U.S. feed grain production this year places the crop at 232 million metric tons, compared with 248 million harvested in 1981. Because of the many uncertainties surrounding acreage and yield at this early date, the probability is 1 in 3 that production might fall below 211 million or exceed 253 million. Corn, sorghum, and barley crops are expected to be down from last year, but the oat crop will likely be larger.

Carryover stocks of feed grains are expected to total 63 million tons this year, almost double the 35 million on hand last year. The increase in carryover will more than offset the decline in production so the total supply of feed grains may be up 5 percent from 1981/82. Corn, sorghum, and oats are expected to be in greater supply, but less barley will probably be available.

Disappearance To Increase Moderately

Total disappearance of feed grains for 1982/83 may be up moderately from the 221-million-ton total expected

during the current marketing year. Feed use is projected to rise about 1.5 million tons because of higher livestock/feed price ratios. Exports may be up about 2 million tons. All of the increase will likely come out of the corn supply, with sorghum and barley disappearance below 1981/82, and the use of oats about the same as this year.

Higher Prices in Prospect

Although the carryover and total supply are expected to be larger in 1982/83, the market supply will be somewhat tighter than during the current year. Almost three-fourths of the 62.5 million tons carried into the 1982 marketing year will be in the FOR or in CCC inventory, leaving "free" stocks smaller than at the beginning of 1981/82. Moreover, a significant part of the new harvest, particularly corn and sorghum, will be eligible for a CCC loan or the reserve. In order to maintain adequate supplies in market channels, prices will have to advance sufficiently to keep part of the eligible new crop from going under loan or in the reserve, or to pull it back out if it does go under loan. Therefore, prices will likely have to average higher in 1982/83 to maintain adequate supplies in market channels.

ANALYSIS OF FACTORS AFFECTING CORN YIELDS: PROJECTIONS TO 1985

by

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ABSTRACT: The most important factors that have contributed to the general increase in corn yields over time are changes in technology, introduction of new hybrids, and increased rates of fertilizer application. Conversely, plant disease and introduction of additional marginal land into production can significantly reduce corn yields. Unstable weather (precipitation and temperature) caused wide variability around the underlying upward trend in yields. Under normal weather conditions, corn yields in 1982 are projected to be 112, 101, and 107 bushels an acre in the Corn Belt, Lake States, and Northern Plains, respectively. If all corn producers who signed up for the acreage reduction program comply, the reduced acreage would just offset unusually favorable weather for corn production.

KEYWORDS: Corn yields, precipitation, temperature, acreage planted, corn yield projections, acreage reduction program.

Since 1970, corn yields in the United States have fluctuated from a low of 71.9 bushels per acre in 1974 to a high of 109.9 bushels per acre in 1981. Most of the fluctuations in total corn production are due to yield changes rather than to adjustments in planted acreage. Even though the acreage reduction program will reduce acreage planted in 1982, highly favorable yield conditions could partially offset the Administration's effort to control corn supply through an acreage reduction program.

The objectives of this article are to: (1) analyze factors that affect corn yields in three major producing regions (Corn Belt, Lake States, and Northern Plains); (2) project corn yields for the 1982-85 crop years in the three major producing regions and the United States under alternative weather conditions; and (3) show how efforts to lower supplies by reducing acreage may be partially offset when average yields are affected by the level of acreage and by good weather.

Factors Affecting Corn Yields

Corn yields in the United States increased from 42 bushels an acre in 1955 to 110 in 1981—an average annual rate of 3.8 percent (table 1). Of the major producing regions, the Northern Plains had the highest annual growth rate. The most important factors contributing to the trend in yields are changes in technology and production practices, introduction of new hybrids, and increased rates of fertilizer application.

Unstable weather conditions, corn diseases, and variations in area planted caused wide variability around the underlying trend. For instance, the late spring in 1974 caused late planting and, combined with an early frost, sizably reduced corn yield. Southern corn blight reduced yields drastically in the Corn Belt and Southern States

in 1970. Also, expanding production onto marginal land can significantly reduce yield and pulling marginal land out of production can increase yield.

The weather variables, precipitation and temperature, in the critical months of corn's growing season were statistically significant factors explaining variations in yield. Possible yield effects of solar radiation, in terms of growing degree days, were also explored.

Corn Belt Results

Statistical analysis for the Corn Belt showed an upward trend in corn yield since 1955. Below-trend yields were caused by excessive or below-normal rainfall in July, above-normal temperatures in July, and the outbreak of southern corn blight in 1970. Changes in the level of acreage planted affected yields. These preliminary results are summarized in table 2.

The rate of fertilizer application, in terms of nitrogen applied per acre, had a significant effect on corn yields. Table 2 shows that 1 additional pound of nitrogen per acre can result in a yield increase of one-quarter bushel an acre.

Rainfall in the Corn Belt is essential during the tasseling period, which occurs during the last 2 weeks of July. Figure 1 shows that yields rise as July precipitation increases to about 1.5 inches above normal but then decreases with further increases in precipitation. The rise is particularly rapid as precipitation increases from low levels to normal. Too much rainfall makes weed control difficult, reduces solar radiation, and in general contributes to the possibility of total rainfall during corn's growing season exceeding the ideal level—about 20 inches.

Temperatures above July's longrun normal (about 75°F) tend to have an adverse effect on corn yields—slightly below-normal temperatures in July are associated with the highest yields.²

¹The authors are grateful for perceptive comments by Keith Collins, Milton Erickson, and Sam Evans, and for weather data provided by Lloyd Teigen. Discussions with Mack Leath, Norton Strommen, Louis Thompson, Larry Van Meir, and numerous other persons also were helpful.

²This is consistent with the findings of other studies. For example, see Louis Thompson, "Weather and Technology in the Production of Corn in the U.S. Corn Belt," *Agronomy Journal* Vol. 61, May-June 1969, pp. 453-456.

Table 1--Trend in corn yields in major producing regions and States: 1955-81

Region and State	1955	1960	1965	1970	1975	1980	1981	Annual growth rate during 1955-1981	Coefficient of variations 1/
	Bushels per acre							Percent	
Corn Belt	51.9	64.7	86.2	77.5	97.5	99.5	120.6	3.2	7.7
Ohio	59.0	68.0	74.0	79.0	93.0	113.0	96.0	1.9	
Indiana	56.0	68.0	94.0	76.0	98.0	96.0	109.0	2.5	
Illinois	56.0	68.0	94.0	74.0	116.0	93.0	129.0	3.1	
Iowa	48.5	63.5	82.0	86.0	90.0	110.0	127.0	3.6	
Missouri	40.0	63.9	83.8	75.2	92.0	53.0	110.0	4.0	
Lake States	49.9	55.6	64.3	83.6	75.1	98.5	106.4	2.8	8.8
Minnesota	50.0	54.0	61.0	85.0	70.0	97.0	110.0	2.9	
Wisconsin	52.5	62.5	76.0	82.0	83.0	104.0	108.0	2.7	
Michigan	47.0	54.0	61.0	81.0	80.0	95.0	96.0	2.7	
Northern Plains	21.9	45.0	57.3	64.0	73.8	78.5	104.4	6.0	8.8
North Dakota	25.0	28.0	37.0	51.0	51.0	58.0	81.0	4.5	
South Dakota	23.5	35.0	39.0	41.0	37.0	53.0	70.0	4.1	
Nebraska	20.0	51.0	70.0	76.0	85.0	85.0	115.0	6.7	
Kansas	24.0	45.5	59.0	64.0	86.0	94.0	126.0	6.3	
United States	42.0	54.7	74.1	72.4	86.4	91.0	109.9	3.8	6.8

1/ Coefficient of variation indicates the percentage of yield deviations from the trend rather than from the mean. The coefficients were computed to explicitly recognize that corn producers have expectations of increasing yields because of technology as reflected in the upward linear trend of corn yields.

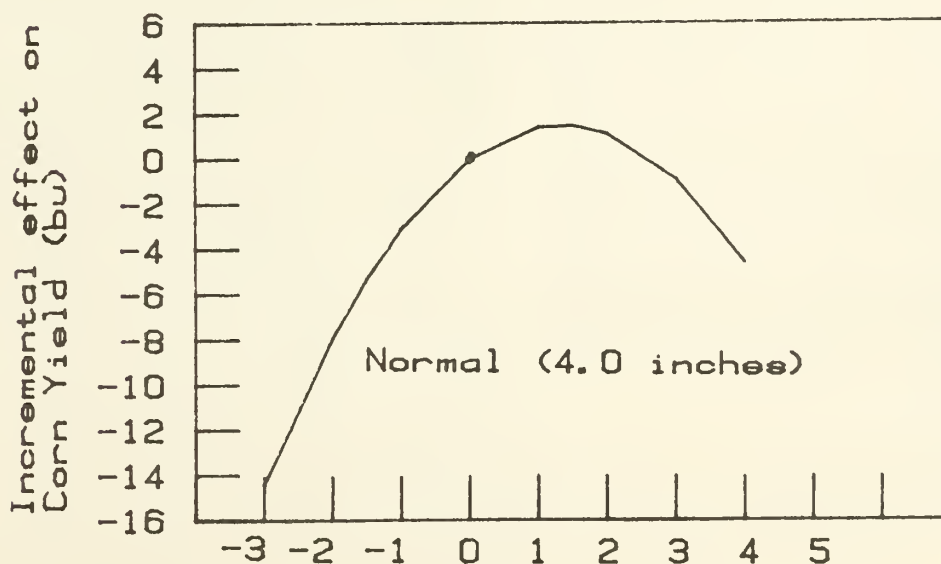
Table 2--Estimated corn yield equations in the major producing regions: 1955-1980 1/

Region	Dependent variable: (CY _i)	Explanatory variables									R ²	Durbin-Watson statistics
		Constant	T	FERT	AP _i	PDJL _i	PDJL _i ²	TDJL _i	DUM70	DUM74		
Corn Belt	CYCB	-2533.09 (-2.29)	1.341 (2.35)	0.239 (2.07)	-1.183 (-2.56)	2.252 (2.13)	-0.853 (-2.39)	-1.854 (-3.76)	-17.936 (-3.37)		0.95	2.26
Lake States	CYLS	-4333.58 (-9.05)	2.254 (9.11)		-2.259 (-2.01)	5.510 (3.23)	-2.434 (-1.84)	-0.297 (-0.48)		-18.028 (-2.65)	0.88	1.26
Northern Plains	CYNP	-3918.31 (-3.45)	2.020 (3.46)	0.160 (1.34)		4.827 (4.39)	-1.534 (-2.10)	-1.001 (-2.05)			0.96	2.72

1/ Figures in parentheses are t-ratios. Variable definitions and their measurement units are:

- CY_i = Yield of corn for grain per harvested acre in the *i*th region (bu)
- T = Time trend as a proxy for technology (1955=1955, 1956=1956, etc.)
- FERT = Rate of nitrogen received per acre for U.S. corn production (pounds)
- AP_i = Acreage of corn planted in the *i*th region (million acres)
- PDJL_i = Precipitation deviation in July from the longrun (1955-80) normal in the *i*th region (inches)
- PDJL_i² = A squared term of the precipitation deviation in July in the *i*th region (inches)
- TDJL_i = Temperature deviation in July for the Corn Belt and Northern Plains, or August for the Lake States, from the longrun (1955-80) normal in the *i*th region (degrees)
- DUM70 = A dummy variable to reflect the southern corn blight that occurred in the Corn Belt and Southern States in 1970 (1 in 1970, 0 otherwise)
- DUM74 = A dummy variable to reflect the late spring and early frost that occurred in the Lake States in 1974 (1 in 1974, 0 otherwise)

Fig. 1 Effect of departure from normal July precipitation on corn yield in the Corn Belt



Departure from normal July precipitation

The southern corn blight of 1970 clearly had a significant impact on corn yield, reducing the average that year by nearly 18 bushels an acre. The analysis also showed that the average yield is related to acreage—yield increases (decreases) by about 1.2 bushels per acre as acreage decreases (increases) by 1 million.

Lake States Results

In many ways, the yield pattern in the Lake States is similar to the Corn Belt. However, the nitrogen application was not included in the equation for the Lake States because it correlated with the time trend variable.

Temperature deviations in August from the longrun normal—about 68°F—do not appear to significantly affect corn yields in this region. This is plausible because temperatures in August in this region seldom exceed the ideal for corn production, slightly below 75°F. The study showed that for each million-acre change in corn area planted, average yield changes in the opposite direction by about 2.3 bushels.

Northern Plains Results

The same factors that explain yields in the other regions also work for the Northern Plains. The one difference is that planted acreage was excluded from the equation. This is because additional cropland brought into corn production in the Northern Plains is usually irrigated, and since irrigated corn generally yields 1.5 times higher than dryland corn, the average yield does not decline as acreage increases.

Analysis of Solar Radiation

The relationship between corn yields and solar radiation in the Lake States during July-August was explored using growing-degree-day data since 1975. However, solar radiation was not strongly and positively correlated to corn yield. This could be potentially due to correlations among degree days, temperature, and rainfall. This relationship should continue to be explored as more observations become available. Also, future yield studies should include soil moisture as another explanatory variable.

Corn Yield Projections Under Alternative Weather Conditions

This section presents corn yield projections for the three major producing regions and the United States under alternative weather scenarios. The following assumptions for nitrogen and planted acreage were used:

1. Rate of nitrogen applied

Actual 1981	1982	Projected		1985
		1983	1984	
		Pounds per acre		
137	134	137	141	145

2. Acreage of corn planted

	Actual				
	1981	1982	1983	1984	1985
1,000 acres					
Corn Belt	38,250	38,000	39,200	41,100	41,100
Lake States	15,350	15,000	14,500	15,200	15,200

Corn plantings in the Corn Belt and Lake States in 1982 were based on the reported February intentions and our judgment of the effects of the acreage reduction program. Projections for the 1983-85 period for the United States were obtained by simulation, using the ERS Food and Agricultural Policy Model. The U.S. projections were then broken down into the regions based on recent regional shares of planted acreage.

The precipitation and temperatures used for the yield projections are classified into normal, unusual, and extreme (table 3 shows the basic weather statistics). The weather conditions are uniquely defined as follows:

Normal: the longrun average precipitation/temperature during 1955-80.

Unusual: a scenario in which the probability of exceeding high precipitation/temperatures and falling short of low levels are each 3 out of 26 years.

Extreme: a scenario in which the probability of the precipitation/temperatures occurring is about 1 in 26 years.

For example, the unusually favorable July precipitation for the Corn Belt is about 5.5 inches, equivalent to the July 1961 rainfall. Rainfall in only 3 years—1958, 1969, and 1979—exceeded 5.5 inches (figure 2). Similarly, unusually unfavorable July precipitation means a rainfall of about 3 inches. There are only 3 years—1966, 1974, and 1975—in which the July rainfall fell below 3 inches. In general, the range of unusual precipitation is 1 to 1.5 standard deviations of normal rainfall. The range of extreme precipitation is covered by 2 to 3 standard deviations. Fluctuations of average July temperatures in the three major producing regions are shown in figure 3.

Under normal weather conditions, corn yields for the 1982 crop year are projected to be 112, 101, and 107 bushels an acre in the Corn Belt, Lake States, and

Table 3—Basic statistics on precipitation and temperature

Region	Statistics	Precipitation in July	Temperature (°)
		Inches	Degrees
Corn Belt	Mean	4.14	74.9
	Standard deviation	1.32	2.0
Lake States	Mean	3.67	67.6
	Standard deviation	0.87	2.3
Northern Plains	Mean	2.87	74.8
	Standard deviation	1.08	2.6

¹ July average for Corn Belt and Northern Plains and August average for Lake States.

Northern Plains, respectively (table 4). Assuming corn yields in regions not covered in this study remain stable in relation to the U.S. yield, the above projections imply a U.S. yield of about 106 bushels an acre in 1982. However, unusual or extreme July weather (such as July precipitation below normal and July or August temperature above normal) could reduce the U.S. corn yield to between 98 and 91 bushels. In the Corn Belt, unusual or extreme bad weather could reduce corn yields to between 103 and 93 bushels an acre.

Fig. 2 Fluctuation in July Precipitation

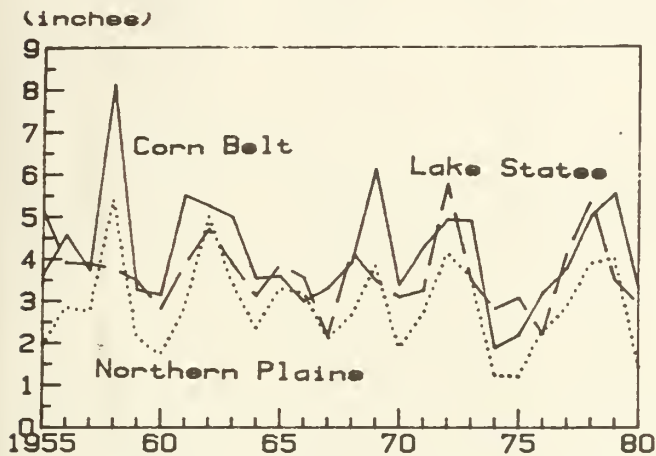
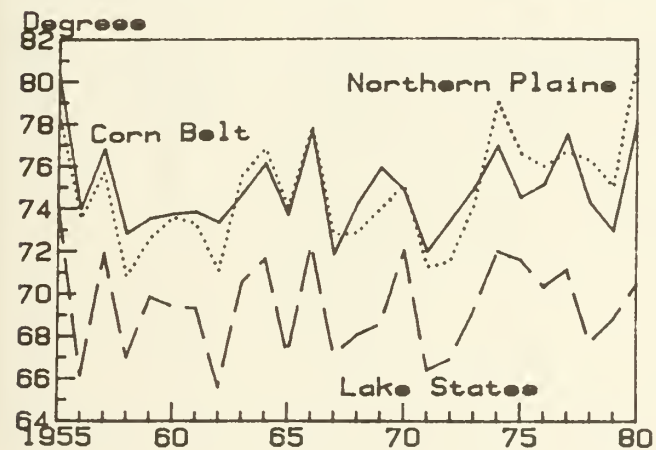


Fig. 3 Fluctuation in July temperature



Implications for the Acreage Reduction Program

Since average corn yields in the Corn Belt and Lake States are inversely related to the level of acreage, percentage reductions in acreage will not be matched by a corresponding percentage reduction in production. This may be illustrated by calculating elasticities of yield with respect to acreage changes ($E_y:A$) and elasticities of production with respect to acreage changes ($E_Q:A$, where $E_Q:A = 1 + E_y:A$).

Given the coefficients on the planted acreage variable (-1.18 bushels for Corn Belt; -2.25 bushels for Lake States), estimated trend yields of 112 bushels for the Corn Belt and 101 bushels for the Lake States, and recent acreage of around 38 million for the Corn Belt and 15 million for the Lake States, the elasticities are:

Corn Belt

$$(1) E_y:A = \frac{-1.18}{112} \cdot \frac{1}{38} = -0.4$$

$$(2) E_Q:A = 1 - 0.4 = 0.6$$

Lake States

$$(3) E_y:A = \frac{-2.25}{101} \cdot \frac{1}{15} = -0.33$$

$$(4) E_Q:A = 1 - 0.33 = 0.67$$

In other words, a 10-percent reduction in Corn Belt acreage (100 percent compliance) would cause only a 6-percent decline in production. If compliance were 50 percent, acreage would be reduced 5 percent and production 3 percent. To achieve a 10-percent decrease in Corn Belt production, an acreage reduction of nearly 17 percent is needed, other things being equal.

The policy issue related to this season's corn yield is whether the yield could be so high as to offset the Government's efforts to control corn supply through the acreage reduction program. It appears that "unusually" high July precipitation and low July or August temperatures could increase the U.S. corn yield by about 6 bushels an acre, implying U.S. corn production could increase by 440 million bushels above normal. The acreage reduction program has the potential of removing about 440 million bushels of corn from the market, assuming all corn producers who signed up for the program actually comply and that the fact that percentage reductions in acreage will not be matched by a corresponding percentage reduction in output is properly taken into account. At that rate of program participation (74 percent), unusually favorable weather could offset the effect of the acreage reduction.

Table 4--Corn yield projections for the major producing regions under alternative weather conditions

Region	Weather condition	1982	1983	1984	1985
Bushels per acre					
Corn Belt	Precipitation <u>1/</u>				
	Normal	111.9	112.5	112.4	114.8
	Unusual: Low	108.1	108.6	108.5	110.9
	High	113.8	114.4	114.3	116.7
	Extreme: Low	102.5	103.1	103.0	105.4
	High	107.3	107.9	107.8	110.2
	Temperature <u>2/</u>				
	Unusual: Low	115.8	116.4	116.3	118.7
	High	107.1	107.7	107.6	110.0
	Extreme: Low	117.7	118.3	118.2	120.6
	High	102.4	103.0	102.9	105.3
Lake States	Precipitation <u>1/</u>				
	Normal	101.0	104.3	104.8	107.1
	Unusual: Low	98.1	101.4	101.9	104.2
	High	104.1	107.4	107.9	104.0
	Extreme: Low	98.1	101.4	101.9	104.2
	High	101.9	103.4	105.7	108.0
	Temperature <u>2/</u>				
	Unusual: Low	101.3	104.6	105.1	107.4
	High	100.7	104.0	104.5	106.8
	Extreme: Low	101.5	104.8	105.3	107.6
	High	100.5	103.8	104.3	106.6
Northern Plains	Precipitation <u>1/</u>				
	Normal	107.4	110.8	112.5	115.2
	Unusual: Low	97.0	100.4	102.1	104.8
	High	111.0	114.0	116.1	118.8
	Extreme: Low	95.2	98.6	100.3	103.0
	High	104.9	113.3	115.3	117.7
	Temperature <u>2/</u>				
	Unusual: Low	110.7	114.1	115.8	118.5
	High	103.7	107.1	108.8	111.5
	Extreme: Low	111.2	114.6	116.3	119.0
	High	101.2	104.6	106.3	109.0

1/ Assumes normal temperature.

2/ Assumes normal precipitation.

Table 3.--Sorghum: Marketing year supply, disappearance, area and prices, 1977-82

Year beginning October 1	Supply			Disappearance							Ending stocks Sept. 30			
	Begin- ning stocks	Produce- tion	Imports	Total	Domestic use			Exports	Total disap- pearance	Govt. owned	Privately owned	Total		
					Food	Alc. bever- ages	Seed and residual						Feed and residual	
Million bushels														
1977/78	91.0	780.9	---	871.9	6.0	3.6	2.0	456.3	467.9	213.5	681.4	13.1	177.4	190.5
1978/79	190.5	731.3	---	921.8	6.0	3.2	1.8	544.7	555.7	206.6	762.3	43.6	115.9	159.5
1979/80	159.5	808.9	---	968.4	6.0	5.0	2.0	484.0	497.0	324.9	821.9	43.9	102.6	146.5
1980/81	146.5	579.2	---	725.7	5.0	4.0	2.0	307.4	318.4	298.7	617.1	38.2	70.4	108.6
1981/82 2/	108.6	880.3	---	988.9	5.0	4.0	2.0	409.9	420.9	300.0	720.9			268.0
1982/83*	268.0	730.0 (± 75)	---	998.0 (± 75)	- - -	11.0	- - -	415.0 (± 45)	426.0 (± 45)	275.0 (± 35)	701.0 (± 65)			297.0 (± 45)
Area					Yield			Average prices			Government support program			
National program	Set-aside and diverted	Planted	Harvested for grain	per harvested acre	Received by farmers 3/	Kans. City		Texas		Gulf Ports	National average loan rate	Target price payments to participants	Total	
						No. 2 Yellow	No. 2 Yellow	No. 2 Yellow	No. 2 Yellow					
Million acres					Bushels					Dollars per cwt.				Mil. dol.
1977/78	---	16.6	13.8	56.6	3.25	3.54	3.88	4.16	3.39	4.07	5/ 168			
1978/79	1.4	16.2	13.4	54.5	3.59	4.00	4.40	4.65	3.39	4.07	6/ 243			
1979/80	1.2	15.3	12.9	62.7	4.18	4.65	4.97	5.54	3.57	4.18	6/ 99			
1980/81	---	15.6	12.5	46.3	5.25	5.36	5.86	6.16	3.82	4.46	7/ 98			
1981/82 2/	---	16.0	13.7	64.1	4.11	4/ 4.28	4/ 4.75	4/ 5.12	4.07	4.55	5/ 265			
1982/83	---	0.9	12.8	57.0	4.20-4.91				4.32	4.64	8/ 67			

1/ Includes quantity under loan and farmer-owned reserve. 2/ Estimated. 3/ Excludes support payments. 4/ October 1981 thru April 1982
5/ Deficiency and disaster payments. 6/ Deficiency, disaster, and diversion payments. 7/ Disaster payments. 8/ Deficiency
payments. *The probability is 2 out of 3 that the final outcome will be within this range.

Table 4.--Barley: Marketing year supply, disappearance, area and prices, 1977-82

[illegible]

1/ Includes quantity under loan and farmer-owned reserve. 2/ Estimated. 3/ Excludes support payments. 4/ June 1981 thru April 1982 average. 5/ Deficiency and disaster payments. 6/ Deficiency, disaster, and diversion payments. 7/ Disaster payments. 8/ Deficiency payments. *The probability is 2 out of 3 that the final outcome will be within this range.

Table 5.--Oats: Marketing year supply, disappearance, area and prices, 1977-82

1/ Includes quantity under loan and farmer-owned reserve. 2/ Estimated. 3/ Not included in the program. 4/ Excludes support payments. 5/ Prior to June 1981 reported for Chicago. 6/ June 1981 thru April 1982 average. *The probability is 2 out of 3 that the final outcome will be within this range.

1/ Includes quantity under loan and farmer-owned reserve. 2/ Estimated. 3/ Not included in the program. 4/ Excludes support payments. 5/ Prior to June 1981 reported for Chicago. 6/ June 1981 thru April 1982 average. *The probability is 2 out of 3 that the final outcome will be within this range.

Table 6.--Feed grains: Feed year supply and disappearance, specified periods, 1977-82
(corn, sorghum, oats, barley)

Year and periods beginning October 1	Supply			Disappearance					Ending stocks		
	Beginning stocks	Production	Imports	Total	Domestic use			Exports	Total disap- pearance	Govt. owned	Privately owned
					Food	Alc. beverage ages	Seed and residual				
Million metric tons											
1977/78											
Oct.-Dec.	43.6	185.1	0.1	228.8	3.1	1.0	0.1	39.9	44.1	2/	172.2
Jan.-Mar.	172.2	---	0.1	172.3	3.3	1.2	0.3	34.1	38.9	2/	121.1
Apr.-May	121.1	---	2/	121.1	2.3	0.9	1.0	17.3	21.5	2/	89.1
June-Sept.	89.1	18.3	0.1	107.5	4.7	1.8	0.2	27.3	34.0	0.7	52.7
Feed year	43.6	203.4	0.3	247.3	13.4	4.9	1.6	118.6	138.5	0.7	52.7
1978/79											
Oct.-Dec.	52.7	203.2	0.1	256.0	3.6	1.2	0.1	45.1	50.0	3.0	193.1
Jan.-Mar.	193.1	---	0.1	193.2	3.2	1.2	0.3	39.0	43.7	3.7	136.9
Apr.-May	136.9	---	0.1	137.0	2.4	0.9	0.8	21.6	25.7	3.7	100.7
June-Sept.	100.7	16.0	0.1	116.8	5.2	1.7	0.2	30.4	37.5	3.7	55.5
Feed year	52.7	219.2	0.4	272.3	14.4	5.0	1.4	136.1	156.9	3.7	55.5
1979/80											
Oct.-Dec.	55.5	222.2	0.1	277.8	3.5	1.2	0.1	47.6	52.4	3.8	206.2
Jan.-Mar.	206.2	---	0.1	206.3	3.2	1.3	0.3	39.6	44.4	3.8	144.1
Apr.-May	144.1	---	2/	144.1	2.5	1.0	0.8	20.3	24.6	5.9	107.9
June-Sept.	107.9	14.5	0.1	122.5	6.5	1.9	0.2	30.4	39.0	7.7	60.4
Feed year	55.5	236.7	0.3	292.5	15.7	5.4	1.4	137.9	160.4	7.7	60.4
1980/81											
Oct.-Dec.	60.4	183.4	0.1	243.9	3.7	1.2	0.1	45.5	50.5	7.7	172.9
Jan.-Mar.	172.9	---	0.1	173.0	3.2	1.3	0.3	32.1	36.9	7.6	117.4
Apr.-May	117.4	---	2/	117.4	2.8	1.0	0.8	20.8	25.4	7.6	80.7
June-Sept.	80.7	17.8	0.1	98.6	7.5	1.8	0.2	24.8	34.3	7.1	45.5
Feed year	60.4	201.2	0.3	261.9	17.2	5.3	1.4	123.2	147.1	7.1	45.5
1981/82											
Oct.-Dec.	45.5	230.6	0.1	276.2	4.1	1.3	0.1	48.8	54.3	7.4	205.3
Jan.-Mar.	205.3	---	0.1	205.4	3.7	1.4	0.3	36.2	41.6	7.7	149.0
Apr.-May											
June-Sept.											
Feed year											

1/ Includes quantity under loan and farmer-owned reserve. 2/ Less than 50,000 metric tons.

Table 7.--Corn: Marketing year supply and disappearance, specified periods, 1977-82

Year and periods beginning October 1	Supply				Disappearance					Ending stocks				
	Begin- ning stocks	Produc- tion	Imports	Total	Food	Alc. bever- ages 1/	Domestic use		Exports	Total disap- pearance	Govt. owned	Privately owned	Total	
							Seed	Feed						
														residual
Million bushels														
1977/78														
Oct.-Dec.	885.9	6,505.0	0.7	7,391.6	115.0	15.7	---	1,290.3	1,421.0	418.3	1,839.3	0.2	5,552.1	5,552.3
Jan.-Mar.	5,552.3	---	0.9	5,553.2	120.0	17.0	3.9	1,088.4	1,229.3	414.5	1,643.8	0.2	3,909.2	3,909.4
Apr.-May	3,909.4	---	0.3	3,909.7	85.0	13.4	11.7	568.3	678.4	370.2	1,048.6	0.2	2,860.9	2,861.1
June-Sept.	2,861.1	---	0.7	2,861.8	180.0	24.3	3.9	797.4	1,005.6	744.8	1,750.4	13.1	1,098.3	1,111.4
Mkt. year	885.9	6,505.0	2.6	7,393.5	500.0	70.4	19.5	3,744.4	4,334.3	1,947.8	6,282.1	13.1	1,098.3	1,111.4
1978/79														
Oct.-Dec.	1,111.4	7,267.9	0.1	8,379.4	132.8	17.1	---	1,456.4	1,606.3	454.0	2,060.3	77.3	6,241.8	6,319.1
Jan.-Mar.	6,319.1	---	0.4	6,319.5	116.9	16.9	3.9	1,255.1	1,392.8	426.3	1,819.1	98.8	4,401.6	4,500.4
Apr.-May	4,500.4	---	0.2	4,500.6	90.3	13.0	11.7	711.2	826.2	387.2	1,213.4	100.6	3,186.6	3,287.2
June-Sept.	3,287.2	---	0.5	3,287.7	191.2	22.3	3.9	900.8	1,118.2	865.6	1,983.8	99.7	1,204.2	1,303.9
Mkt. year	1,111.4	7,267.9	1.2	8,380.5	531.2	69.3	19.5	4,323.5	4,943.5	2,133.1	7,076.6	99.7	1,204.2	1,303.9
1979/80														
Oct.-Dec.	1,303.9	7,938.8	0.3	9,243.0	128.2	16.3	---	1,549.4	1,693.9	662.9	2,356.8	99.7	6,786.5	6,886.2
Jan.-Mar.	6,886.2	---	0.3	6,886.5	116.6	18.4	4.0	1,308.2	1,447.2	582.0	2,029.2	101.2	4,756.1	4,857.3
Apr.-May	4,857.3	---	0.1	4,857.4	93.2	13.9	12.0	682.3	801.4	385.6	1,187.0	180.5	3,489.9	3,670.4
June-Sept.	3,670.4	---	0.4	3,670.8	244.8	23.6	4.0	978.8	1,251.2	802.1	2,053.3	256.3	1,361.2	1,617.5
Mkt. year	1,303.9	7,938.8	1.1	9,243.8	582.8	72.2	20.0	4,518.7	5,193.7	2,432.6	7,626.3	256.3	1,361.2	1,617.5
1980/81														
Oct.-Dec.	1,617.5	6,644.8	0.2	8,262.5	136.3	16.2	---	1,523.4	1,675.9	727.8	2,403.7	254.3	5,604.5	5,858.8
Jan.-Mar.	5,858.8	---	0.3	5,859.1	116.3	18.6	4.0	1,100.1	1,239.0	632.9	1,871.9	250.0	3,737.2	3,987.2
Apr.-May	3,987.2	---	0.1	3,987.3	106.7	13.8	12.2	684.7	817.4	395.7	1,213.1	251.6	2,522.6	2,774.2
June-Sept.	2,774.2	---	0.6	2,774.8	282.5	24.5	4.0	831.0	1,142.0	598.8	1,740.8	237.8	796.2	1,034.0
Mkt. year	1,617.5	6,644.8	1.2	8,263.5	641.8	73.1	20.2	4,139.2	4,874.3	2,355.2	7,229.5	237.8	796.2	1,034.0
1981/82														
Oct.-Dec.	1,034.0	8,201.0	0.4	9,235.4	153.8	16.2	---	1,621.3	1,791.3	545.5	2,336.8	247.6	6,651.0	6,898.6
Jan.-Mar.	6,898.6	---	0.3	6,898.9	130.5	19.5	3.9	1,181.5	1,335.4	489.4	1,824.8	261.7	4,812.4	5,074.1
Apr.-May														
June-Sept.														
Mkt. year														

1/ Malt beverage and distilled liquor grain products converted to a corn basis. 2/ Includes quantity under loan and farmer-owned reserve.

Table 8.--Sorghum: Marketing year supply and disappearance, specified periods, 1977-82

Year and periods beginning October 1	Supply			Disappearance						Ending stocks		
	: Begin- ning stocks	: Produc- tion	: Imports	: Total	Domestic use			: Exports	: Total disap- pearance	: Govt. owned	: Privately owned	: Total
					: Alc. bever- ages	: Seed and residual	: Feed and residual					
Million bushels												
1977/78												
Oct.-Dec.	91.0	780.9	---	871.9	1.5	---	197.1	56.0	255.4	---	616.5	616.5
Jan.-Mar.	616.5	---	---	616.5	1.3	0.2	133.1	68.0	203.5	0.2	412.8	413.0
Apr.-May	413.0	---	---	413.0	1.5	1.2	54.8	35.8	93.9	0.2	318.9	319.1
June-Sept.	319.1	---	2/	319.1	1.7	0.6	71.3	53.7	128.6	13.1	177.4	190.5
Mkt. year	91.0	780.9	2/	871.9	6.0	2.0	456.3	213.5	681.4	13.1	177.4	190.5
1978/79												
Oct.-Dec.	190.5	731.3	---	921.8	1.4	---	235.7	46.6	284.8	36.6	600.4	637.0
Jan.-Mar.	637.0	---	---	637.0	1.6	0.2	149.2	68.3	219.7	42.4	374.9	417.3
Apr.-May	417.3	---	---	417.3	1.3	1.1	64.3	28.0	95.1	42.8	279.4	322.2
June-Sept.	322.2	---	2/	322.2	1.7	0.5	95.5	63.7	162.7	43.6	115.9	159.5
Mkt. year	190.5	731.3	2/	921.8	6.0	1.8	544.7	206.6	762.3	43.6	115.9	159.5
1979/80												
Oct.-Dec.	159.5	808.9	---	968.4	1.6	---	243.4	74.2	320.7	45.3	602.4	647.7
Jan.-Mar.	647.7	---	---	647.7	1.6	0.2	140.3	108.5	251.7	45.6	350.4	396.0
Apr.-May	396.0	---	---	396.0	1.4	1.2	54.7	60.3	118.1	45.6	232.3	277.9
June-Sept.	277.9	---	2/	277.9	1.4	0.6	45.6	81.9	131.4	43.9	102.6	146.5
Mkt. year	159.5	808.9	2/	968.4	6.0	2.0	484.0	324.9	821.9	43.9	102.6	146.5
1980/81												
Oct.-Dec.	146.5	579.2	2/	725.7	1.6	---	198.2	60.3	261.3	43.7	420.7	464.4
Jan.-Mar.	464.4	---	2/	464.4	1.6	0.2	63.8	84.1	150.6	43.5	270.3	313.8
Apr.-May	313.8	---	2/	313.8	0.8	1.2	84.9	41.7	129.3	43.8	140.7	184.5
June-Sept.	184.5	---	2/	184.5	1.0	0.6	-39.5	112.6	75.9	38.2	70.4	108.6
Mkt. year	146.5	579.2	2/	725.7	5.0	2.0	307.4	298.7	617.1	38.2	70.4	108.6
1981/82												
Oct.-Dec.	108.6	880.3	2/	988.9	1.6	---	219.0	77.8	299.4	38.4	651.1	689.5
Jan.-Mar.	689.5	---	2/	689.5	1.6	0.2	150.9	74.3	228.0	38.2	423.3	461.5
Apr.-May												
June-Sept.												
Mkt. year												

1/ Includes quantity under loan and farmer-owned reserve. 2/ Less than 50,000 bushels.

Table 9.--Barley: Marketing year supply and disappearance, specified periods, 1977-82

Year and periods beginning June 1	Supply				Disappearance							Ending stocks		
	Begin- ning stocks	Produc- tion	Imports	Total	Food	Domestic use			Exports	Total disap- pearance	Gov't. owned	Privately owned	Total	
						Alc. bever- ages	Seed and residual	Feed						
Million bushels														
1977/78														
June-Sept.	126.4	427.8	5.1	559.3	2.3	46.7	1.4	64.6	115.0	34.9	---	409.4	409.4	
Oct.-Dec.	409.4	---	1.8	411.2	1.4	28.2	2.3	32.7	64.6	14.4	---	332.2	332.2	
Jan.-Mar.	332.2	---	1.8	334.0	1.4	32.8	4.0	54.4	92.6	2.3	---	239.1	239.1	
Apr.-May	239.1	---	0.7	239.8	0.9	25.4	9.0	25.8	61.1	5.6	---	173.1	173.1	
Mkt. year	126.4	427.8	9.4	563.6	6.0	133.1	16.7	177.5	333.3	57.2	---	173.1	173.1	
1978/79														
June-Sept.	173.1	454.8	2.7	630.6	2.3	52.5	1.1	83.8	139.7	18.8	0.8	471.3	472.1	
Oct.-Dec.	472.1	---	2.8	474.9	1.4	33.0	1.9	42.7	79.0	4.7	1.4	389.8	391.2	
Jan.-Mar.	391.2	---	3.0	394.2	1.4	35.5	3.3	56.8	97.0	0.8	2.3	294.1	296.4	
Apr.-May	296.4	---	2.0	298.4	0.9	26.5	7.3	34.3	69.0	1.4	2.5	225.5	228.0	
Mkt. year	173.1	454.8	10.5	638.4	6.0	147.5	13.6	217.6	384.7	25.7	2.5	225.5	228.0	
1979/80														
June-Sept.	228.0	382.8	3.7	614.5	2.5	51.9	1.1	87.3	142.8	9.9	2.9	458.9	461.8	
Oct.-Dec.	461.8	---	2.8	464.6	1.7	33.9	2.0	39.0	76.6	22.4	3.1	362.5	365.6	
Jan.-Mar.	365.6	---	3.2	368.8	1.7	37.3	3.4	53.0	95.4	11.1	3.3	259.0	262.3	
Apr.-May	262.3	---	2.1	264.4	1.1	27.9	7.5	24.4	60.9	11.4	3.2	188.9	192.1	
Mkt. year	228.0	382.8	11.8	622.6	7.0	151.0	14.0	203.7	375.7	54.8	3.2	188.9	192.1	
1980/81														
June-Sept.	192.1	361.0	3.5	556.6	2.5	56.6	1.2	78.9	139.2	24.9	3.5	389.0	392.5	
Oct.-Dec.	392.5	---	2.3	394.8	1.7	33.9	2.2	32.2	70.0	21.4	3.5	299.9	303.4	
Jan.-Mar.	303.4	---	2.7	306.1	1.7	36.0	3.7	38.6	80.0	22.7	3.4	200.0	203.4	
Apr.-May	203.4	---	1.7	205.1	1.1	28.8	6.1	24.1	60.1	7.7	3.4	133.9	137.3	
Mkt. year	192.1	361.0	10.2	563.3	7.0	155.3	13.2	173.8	349.3	76.7	3.4	133.9	137.3	
1981/82														
June-Sept.	137.3	478.3	2.4	618.0	2.5	51.3	1.2	79.4	134.4	32.6	3.3	447.7	451.0	
Oct.-Dec.	451.0	---	2.4	453.4	1.7	39.0	2.2	45.3	88.2	33.0	3.3	328.9	332.2	
Jan.-Mar.	332.2	---	2.7	334.9	1.7	40.1	3.5	40.0	85.3	23.1	3.3	223.2	226.5	
Apr.-May														
Mkt. year														

1/ Includes quantity under loan and farmer-owned reserve.

Table 10.--Oats: Marketing year supply and disappearance, specified periods, 1977-82

Year and periods beginning June 1	Supply			Disappearance						Ending stocks		
	Beginning stocks	Production	Imports	Total	Domestic use			Exports	Total disappearance	Govt. owned	Privately owned	Total
					Food	Alc. beverages	Seed and residual					
					ages						1/	
Million bushels												
1977/78												
June-Sept.	164.3	752.8	1.1	918.2	14.4	---	2.1	219.5	236.0	---	679.5	679.5
Oct.-Dec.	679.5	---	0.5	680.0	10.7	---	2.1	92.4	105.2	---	568.0	568.0
Jan.-Mar.	568.0	---	0.4	568.4	10.1	---	8.5	126.5	145.1	---	421.8	421.8
Apr.-May	421.8	---	0.2	422.0	6.8	---	29.8	71.0	107.6	---	313.1	313.1
Mkt. year	164.3	752.8	2.2	919.3	42.0	---	42.5	509.4	593.9	---	313.1	313.1
1978/79												
June-Sept.	313.1	581.7	0.3	895.1	14.7	---	1.8	224.8	241.3	1.5	644.4	645.9
Oct.-Dec.	645.9	---	0.1	646.0	10.3	---	1.8	84.2	96.3	2.5	543.8	546.3
Jan.-Mar.	546.3	---	0.2	546.5	10.7	---	7.2	146.3	164.2	2.7	378.9	381.6
Apr.-May	381.6	---	0.1	381.7	5.3	---	25.3	70.4	101.0	2.7	277.3	280.0
Mkt. year	313.1	581.7	0.7	895.5	41.0	---	36.1	525.7	602.8	2.7	277.3	280.0
1979/80												
June-Sept.	280.0	526.6	0.3	806.9	14.6	---	1.7	221.6	237.9	2.6	565.5	568.1
Oct.-Dec.	568.1	---	0.2	568.3	10.4	---	1.7	77.5	89.6	2.6	474.2	476.8
Jan.-Mar.	476.8	---	0.2	477.0	10.3	---	6.9	119.7	136.9	2.7	336.9	339.6
Apr.-May	339.6	---	0.2	339.8	5.4	---	24.3	72.9	102.6	2.7	233.7	236.4
Mkt. year	280.0	526.6	0.9	807.5	40.7	---	34.6	491.7	567.0	2.7	233.7	236.4
1980/81												
June-Sept.	236.4	458.3	0.6	695.3	15.0	---	1.8	190.0	206.8	2.7	481.9	484.6
Oct.-Dec.	484.6	---	0.2	484.8	10.0	---	1.8	79.2	91.0	2.7	388.3	391.0
Jan.-Mar.	391.0	---	0.3	391.3	10.0	---	7.0	115.6	132.6	2.5	253.6	256.1
Apr.-May	256.1	---	0.2	256.3	6.0	---	22.4	47.0	75.4	2.5	174.4	176.9
Mkt. year	236.4	458.3	1.3	696.0	41.0	---	33.0	431.8	505.8	2.5	174.4	176.9
1981/82												
June-Sept.	176.9	508.1	0.3	685.3	16.0	---	2.0	206.3	224.3	1.7	456.1	457.8
Oct.-Dec.	457.8	---	0.2	458.0	10.0	---	2.0	80.1	92.1	1.7	363.0	364.7
Jan.-Mar.	364.7	---	0.2	364.9	10.0	---	7.5	109.7	127.2	1.7	234.8	236.5
Apr.-May												
Mkt. year												

1/ Includes quantity under loan and farmer-owned reserve.

Table 11.--Average prices received by farmers, United States, by months, 1977-82

Item and year beginning October 1	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average weighted by sales 1/
<u>Dollars per bushel</u>													
Corn													
1977	1.67	1.88	1.97	2.00	2.03	2.15	2.24	2.29	2.28	2.16	2.01	1.98	2.02
1978	1.97	2.02	2.09	2.11	2.18	2.22	2.27	2.35	2.49	2.64	2.54	2.51	2.25
1979	2.41	2.27	2.38	2.45	2.39	2.40	2.36	2.42	2.49	2.73	2.92	3.01	2.52
1980	2.99	3.10	3.19	3.19	3.22	3.25	3.24	3.24	3.17	3.14	2.87	2.55	3.11
1981	2.45	2.34	2.39	2.54	2.44	2.46	*2.51						
<u>Dollars per 100 pounds</u>													
Sorghum													
1977	2.80	3.03	3.05	3.15	3.20	3.39	3.62	3.66	3.64	3.50	3.37	3.22	3.25
1978	3.35	3.45	3.58	3.54	3.55	3.54	3.58	3.66	4.30	4.46	4.27	4.24	3.59
1979	3.90	3.99	3.90	4.05	3.98	4.05	3.96	4.04	4.49	4.95	5.12	5.12	4.18
1980	5.36	5.48	5.49	5.48	5.33	5.17	5.25	5.16	5.03	4.84	4.55	4.07	5.25
1981	3.90	3.87	3.95	4.09	4.08	4.00	*4.11						
Item and year beginning June 1	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Average weighted by sales 1/
<u>Dollars per bushel</u>													
Oats													
1977	1.29	1.02	0.93	0.94	1.04	1.10	1.13	1.18	1.22	1.17	1.19	1.24	1.10
1978	1.16	1.08	1.06	1.06	1.08	1.15	1.19	1.22	1.25	1.27	1.29	1.29	1.20
1979	1.35	1.33	1.24	1.29	1.31	1.41	1.31	1.39	1.37	1.34	1.38	1.43	1.36
1980	1.48	1.50	1.53	1.63	1.65	1.84	1.92	1.98	2.01	2.08	2.05	2.05	1.79
1981	1.99	1.82	1.73	1.74	1.78	1.88	1.94	1.97	1.99	2.02	*1.98		
Barley													
1977	1.93	1.53	1.53	1.69	1.63	1.82	1.79	1.90	1.98	1.90	1.93	2.15	1.78
1978	2.04	1.83	1.86	1.85	1.90	1.93	1.90	1.95	1.87	1.89	1.96	2.07	1.92
1979	2.30	2.22	2.23	2.33	2.32	2.40	2.32	2.27	2.23	2.18	2.15	2.21	2.29
1980	2.36	2.52	2.59	2.65	2.81	2.90	2.97	3.09	3.05	3.04	3.04	3.00	2.85
1981	2.94	2.41	2.37	2.44	2.38	2.49	2.48	2.50	2.40	2.40	*2.36		
Item and year beginning May 1	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Average weighted by sales
<u>Dollars per ton</u>													
Hay													
1977	68.10	61.30	56.80	52.50	50.00	48.20	48.40	49.50	50.50	51.80	51.40	51.40	53.70
1978	55.30	51.20	49.20	49.00	47.80	47.10	46.40	47.30	48.90	50.70	50.20	49.90	49.80
1979	65.60	58.00	56.00	57.50	59.00	60.80	58.90	60.10	59.10	60.00	57.40	60.10	59.50
1980	69.30	65.10	67.00	67.20	71.90	77.20	75.00	74.80	72.80	72.50	69.80	68.20	71.00
1981	75.50	66.80	64.10	62.90	62.70	64.20	64.70	65.90	68.70	70.40	70.90	73.40	67.10

1/ Includes an allowance for unredeemed loans and purchase agreement deliveries valued at the average loan rate, by States; excludes government payments.

* Preliminary (mid-month price).

Source: Agricultural Prices, Crop Reporting Board, USDA.

Table 12.--Cash prices at principal markets, 1977-82

Item and year beginning October 1	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Simple average
<u>Dollars per bushel</u>													
CORN No. 2 Yellow, St. Louis <u>1/</u>													
1977	1.75	2.14	2.23	2.20	2.24	2.38	2.46	2.49	2.45	2.27	2.12	2.05	2.23
1978	2.13	2.25	2.30	2.33	2.41	2.47	2.53	2.60	2.77	2.95	2.73	2.68	2.51
1979	2.59	2.51	2.66	2.50	2.64	2.54	2.53	2.60	2.66	3.01	3.31	3.26	2.73
1980	3.35	3.53	3.59	3.60	3.47	3.42	3.49	3.42	3.33	3.34	3.03	2.61	3.35
1981	2.53	2.59	2.54	2.65	2.61	2.66	*2.78						
CORN No. 2 Yellow, Omaha													
1977	1.79	2.02	2.04	2.02	2.03	2.14	2.25	2.34	2.33	2.13	1.98	1.95	2.08
1978	2.05	2.04	2.09	2.12	2.13	2.17	2.26	2.40	2.59	2.68	2.45	2.37	2.28
1979	2.37	2.32	2.36	2.26	2.33	2.23	2.32	2.43	2.50	2.81	2.98	3.01	2.49
1980	3.16	3.34	3.30	3.29	3.18	3.17	3.24	3.24	3.19	3.15	2.79	2.51	3.13
1981	2.44	2.39	2.37	2.47	2.45	2.48	*2.61						
<u>Dollars per hundred weight</u>													
SORGHUM No. 2 Yellow, Kansas City													
1977	3.05	3.40	3.36	3.37	3.49	3.78	3.92	3.92	3.82	3.54	3.41	3.43	3.54
1978	3.61	3.67	3.64	3.71	3.73	3.77	3.81	3.92	4.41	4.89	4.44	4.34	4.00
1979	4.42	4.41	4.57	4.21	4.35	4.20	4.15	4.31	4.49	5.36	5.71	5.61	4.65
1980	5.65	5.91	5.82	5.79	5.52	5.46	5.49	5.38	5.23	5.29	4.58	4.16	5.36
1981	4.14	4.14	4.28	4.44	4.26	4.28	*4.45						
Item and year beginning June 1	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Simple average
<u>Dollars per bushel</u>													
OATS No. 2 Heavy, Minneapolis													
1977	1.38	1.15	1.02	1.11	1.17	1.34	1.32	1.32	1.32	1.33	1.40	1.43	1.27
1978	1.36	1.24	1.28	1.36	1.39	1.47	1.40	1.47	1.54	1.60	1.48	1.55	1.43
1979	1.68	1.60	1.47	1.55	1.65	1.67	1.59	1.52	1.50	1.48	1.52	1.62	1.57
1980	1.67	1.80	1.70	1.86	1.96	2.15	2.16	2.20	2.25	2.23	2.21	2.23	2.04
1981	2.18	2.02	1.99	2.02	2.09	2.28	2.10	2.23	2.26	2.16	*2.21		
BARLEY No. 2 or Better Feed, Minneapolis													
1977	1.76	1.63	1.50	1.58	1.66	1.65	1.65	1.65	1.65	1.66	1.91	1.90	1.68
1978	1.84	1.71	1.68	1.77	1.81	1.88	1.79	1.71	1.69	1.86	1.89	1.96	1.80
1979	2.16	2.39	2.15	2.22	2.34	2.11	2.15	2.09	2.04	2.06	2.12	2.09	2.16
1980	2.15	2.48	2.39	2.43	2.77	3.03	2.75	2.81	2.90	2.63	2.51	2.39	2.60
1981	2.09	2.26	2.35	2.21	2.26	2.31	2.06	2.20	2.27	2.16	*2.16		
BARLEY No. 3 or Better Malting, 65% or Better Plump, Minneapolis													
1977	2.38	2.02	1.92	2.15	2.25	2.36	2.32	2.26	2.33	2.32	2.44	2.51	2.27
1978	2.39	2.13	2.19	2.27	2.26	2.47	2.40	2.30	2.33	2.46	2.59	2.73	2.38
1979	2.80	2.82	2.67	3.10	3.18	3.06	2.93	2.87	2.81	2.69	2.73	2.82	2.87
1980	2.99	3.36	3.27	3.63	3.80	3.88	3.77	3.75	3.83	3.71	3.84	3.80	3.64
1981	3.34	2.95	3.15	3.05	3.02	3.07	2.92	3.00	3.14	2.99	*2.98		

1/ Effective April 1, 1982, Spot Rail Grain Bids at Chicago will no longer be collected or disseminated by the United States Department of Agriculture, AMS, Livestock and Grain Market News.

* Preliminary.

Source: Grain Market News, AMS, USDA.

Table 13.--Livestock, poultry and milk-feed price ratios, by months, 1977-82

Item and year beginning October 1	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average
HOG/CORN, U.S. Basis <u>1/</u>													
1977	23.9	20.1	21.3	22.0	23.3	21.6	20.1	20.9	20.9	21.0	23.6	24.2	21.9
1978	25.8	23.4	23.0	24.0	24.1	21.8	19.4	18.4	15.9	14.4	14.3	14.8	19.9
1979	14.0	15.2	15.5	14.8	15.4	13.9	11.9	11.8	13.3	15.1	15.8	15.3	14.3
1980	15.8	14.7	13.8	12.8	12.8	11.9	12.0	12.6	15.0	15.7	17.1	19.1	14.4
1981 <u>2/</u>	18.4	17.7	16.3	17.1	19.8	19.8	20.2						
BEEF-STEER/CORN, Omaha <u>3/</u>													
1977	23.6	20.7	21.1	21.6	22.2	22.7	23.3	24.5	23.8	25.6	26.5	27.8	23.6
1978	26.8	26.4	26.6	28.5	30.5	32.7	33.2	30.8	26.5	25.0	25.6	28.6	28.4
1979	27.8	28.9	28.8	29.4	29.0	30.0	27.6	26.6	26.6	25.3	24.3	23.1	27.3
1980	21.3	19.5	19.5	19.1	19.3	19.4	20.0	20.6	21.4	21.5	23.8	26.0	21.0
1981 <u>2/</u>	25.2	25.0	25.0	24.6	25.9	26.5	26.5						
MILK/FEED, U.S. Basis <u>4/</u>													
1977	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.6	1.5
1978	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.4	1.5	1.5	1.5
1979	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.5
1980	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.7
1981 <u>2/</u>	1.5	1.6	1.6	1.6	1.5	1.5	1.5						
EGG/FEED, U.S. Basis <u>5/</u>													
1977	7.1	7.3	7.4	6.7	7.5	7.4	6.7	6.3	5.6	6.4	7.0	7.3	6.9
1978	7.0	7.5	8.0	7.8	7.7	8.0	7.4	6.9	6.7	6.1	6.1	6.4	7.1
1979	6.1	6.8	7.3	6.6	5.9	6.3	6.0	5.3	5.5	5.7	6.0	6.2	6.1
1980	5.7	6.0	6.6	5.9	5.7	5.7	6.0	5.2	5.2	5.5	5.7	6.4	5.8
1981 <u>2/</u>	6.5	7.2	6.7	6.6	6.8	7.2	7.2						
BROILER/FEED, U.S. Basis <u>6/</u>													
1977	3.0	2.7	2.6	2.8	3.0	3.0	3.3	3.3	3.5	3.7	3.1	3.1	3.1
1978	2.9	2.8	2.9	3.1	3.3	3.1	3.0	3.2	2.9	2.5	2.3	2.4	2.9
1979	2.2	2.6	2.6	2.8	2.6	2.5	2.3	2.5	2.6	3.3	3.0	2.9	2.7
1980	2.8	2.5	2.5	2.5	2.6	2.6	2.3	2.4	2.5	2.6	2.6	2.4	2.5
1981 <u>2/</u>	2.4	2.4	2.3	2.6	2.6	2.6	2.6						
TURKEY/FEED, U.S. Basis <u>7/</u>													
1977	4.3	4.5	4.5	4.3	4.2	4.3	4.2	4.3	4.4	4.5	4.8	4.9	4.4
1978	5.0	5.1	5.4	5.0	4.6	4.3	4.3	4.2	3.9	3.5	3.7	3.7	4.4
1979	3.9	4.5	4.3	3.8	3.6	3.5	3.4	3.1	3.1	3.5	3.5	3.7	3.7
1980	3.9	3.8	3.5	3.1	3.1	3.2	3.0	3.1	3.2	3.3	3.3	3.1	3.3
1981 <u>2/</u>	2.8	3.1	2.9	2.9	2.9	3.0	3.0						

1/ Number bushels of corn equal in value to 100 pounds of hog liveweight.

2/ Preliminary.

3/ Based on price of beef-steers 900-1,100 pounds, choice instead of average grade all steers previously published.

4/ Pounds 16% dairy feed equal in value to one pound whole milk.

5/ Number of pounds of laying feed equal in value to one dozen eggs.

6/ Number of pounds of broiler grower feed equal in value to one pound broiler liveweight.

7/ Pounds of turkey grower feed equal in value to one pound turkey liveweight.

Source: Agricultural Prices, Crop Reporting Board, USDA.

Table 14.--Price trends, selected feeds and corn products

Item	Unit	: Oct.-Sept.:	1982				
		: 1980/81	: Jan.	: Feb.	: Mar.	: Apr.	
		: 1/	:	:	:	: 1/	
<u>WHOLESALE, MOSTLY BULK 2/</u>		:	:				
Soybean meal, 44% solvent, Decatur	\$/ton	:	218	191	191	184	190
Soybean meal, high protein, Decatur	"	:	235	205	204	198	205
Cottonseed meal, 41% expeller,	:	:					
Memphis	"	:	198	185	159	143	151
Linseed meal, 34% solvent,	:	:					
Minneapolis	"	:	161	149	148	152	155
Peanut meal, Southeast Mills	"	:	236	199	193	169	172
Meat meal, Ill. Prod. Pts.	"	:	250	206	206	209	218
Fishmeal, 65% protein, East Coast	"	:	427	370	378	377	360
Gluten feed, Chicago	"	:	120	117	117	112	112
Gluten meal, 60% protein, Chicago	"	:	269	275	271	243	225
Brewers' dried grains, Chicago-	:	:					
Milwaukee	"	:	116	103	98	85	95
Distillers' dried grains, dark,	:	:					
Lawrenceburg	"	:	162	146	148	139	137
Feather meal, Jackson	"	:	268	247	265	283	274
Wheat bran, Kansas City	"	:	103	80	77	74	87
Wheat middlings, Kansas City	"	:	103	80	77	74	87
Rice bran, f.o.b. Mills, Arkansas	"	:	80	85	73	66	64
Hominy feed, Ill. Pts.	"	:	105	82	69	65	80
Alfalfa meal, dehy., Kansas City	"	:	122	109	105	100	100
Cane molasses, New Orleans	"	:	99	50	50	50	50
Molasses beet pulp, Los Angeles	"	:	132	116	121	124	112
Animal fat, Ill. Prod. Pts.	"	:	15.9	14.0	14.2	15.0	15.3
Urea, 42%, N. Fort Worth	"	:	221	225	225	225	225
Corn, no. 2 white, Kansas City	\$/bu	:	4.96	2.59	2.60	2.60	2.66
<u>PRICES PAID, U.S. BASIS 3/</u>		:	:				
Soybean meal, 44%	\$/cwt	:	15.38	13.70	13.90	13.70	13.80
Cottonseed meal, 41%	"	:	15.23	13.70	13.90	13.60	13.60
Wheat bran	"	:	10.35	10.10	10.00	9.96	9.93
Wheat middlings	"	:	9.96	9.75	9.62	9.46	9.47
Broiler grower feed	\$/ton	:	233	211	209	207	215
Laying feed	"	:	214	193	195	190	191
Turkey grower feed	"	:	254	224	227	225	228
Chick starter	"	:	279	214	213	212	214
Dairy feed, 16%	"	:	196	181	180	179	179
Beef cattle concentrate, 32-36%	\$/cwt	:	12.33	11.60	11.50	11.40	11.50
Hog concentrate, 38-42% protein	"	:	16.43	15.10	15.10	14.90	15.00
Stock salt	"	:	5.63	5.95	5.96	6.00	6.06
<u>CORN PRODUCTS, WHOLESALE 4/</u>		:	:				
Corn meal, New York	:	:					
White	\$/cwt	:	19.67	13.99	14.29	14.34	14.77
Yellow	"	:	13.27	11.52	11.79	11.85	12.32
Grits (brewers'), Chicago	"	:	10.59	8.84	8.65	9.33	9.66
Syrup, Chicago West	c/lb	:	16.64	14.03	14.03	14.03	14.03
Sugar (dextrose), Chicago West	"	:	28.78	25.00	25.00	25.00	25.00
High-fructose (dry weight tank	:	:					
car), Chicago West	"	:	23.76	14.08	14.08	14.08	14.08
Corn starch, f.o.b. Midwest	\$/cwt	:	11.78	10.10	10.10	10.00	10.30

1/ Preliminary. 2/ Grain and Feed Market News, AMS, USDA, except urea which is from Feedstuffs, Miller Publishing Co., Minneapolis, Minnesota. 3/ Agricultural Prices, CRB, USDA. 4/ Milling and Baking News, Kansas City, Missouri, except starch which is from industry sources.

Table 15.--Feed grain support loan status, 1977-81 crops,
as of May 12, 1982

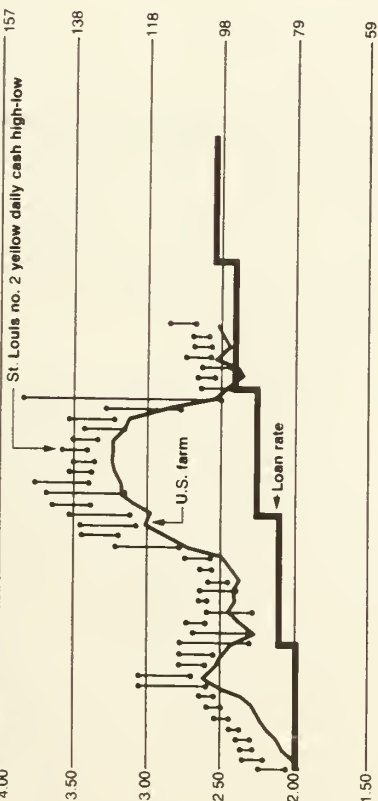
Item	: :Placed :under : loan :	: :Redeemed : by : farmers :	: :Delivered : to : CCC :	: :In reserve : program : <u>1/</u> :	: : Loans : out- : standing :	: : Total : in reserve : and loans : outstanding : <u>1/</u>
	<u>Million bushels</u>					
<u>CORN</u>						
1977	: 1,159	689	94	*(25)	0	0
1978	: 642	582	2	(17)	0	0
1979	: 557	524	<u>2/</u>	(21)	0	0
1980	: 840	738	<u>29</u>	37(34)	4	41
1981	: 1,945	138	<u>2/</u>	1,180	627	1,807
<u>SORGHUM</u>						
1977	: 217	133	41	0	0	0
1978	: 92	87	5	0	0	0
1979	: 64	64	0	0	0	0
1980	: 32	21	1	10	<u>2/</u>	10
1981	: 275	20	0	213	<u>43</u>	256
<u>OATS</u>						
1977	: 83	56	3	0	0	0
1978	: 25	25	<u>2/</u>	0	0	0
1979	: 12	12	<u>0</u>	0	0	0
1980	: 6	6	0	0	0	0
1981	: 10	5	0	0	4	4
<u>BARLEY</u>						
1977	: 87	65	3	0	0	0
1978	: 68	63	<u>2/</u>	4	0	4
1979	: 30	28	<u>0</u>	3	0	3
1980	: 31	26	0	5	<u>2/</u>	5
1981	: 59	20	0	10	<u>28</u>	38

1/ Reserve corn for 1980 and earlier crops have been called. Reserves for 1981 feed grain crops and 1980 crops remaining under loan were open on October 6. 2/ Less than 500,000 bushels. *Parenthesis indicate extended loans in reserve.

SOURCE: Agricultural Stabilization and Conservation Service.

Corn Prices

\$ per bushel
4.00
\$ per metric ton
157

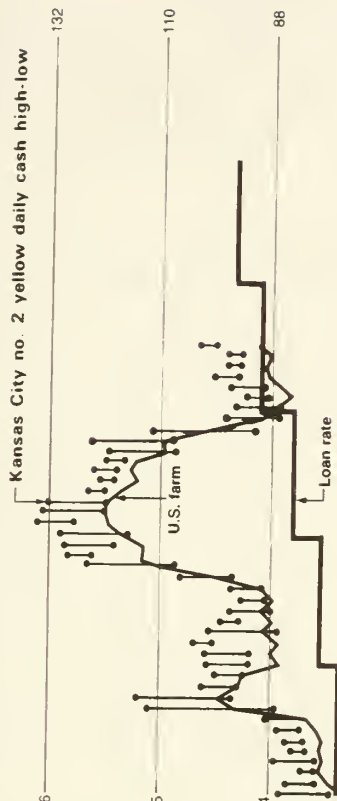


3.50
3.00
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1.50
1.00
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0
O J A J O J A J O J A J O J A J O J A J
1978/79 1980/81 1982/83
Year beginning October

USDA
Neg. ERS 382-82(5)

Sorghum Prices

\$ per cwt
7
\$ per metric ton
154

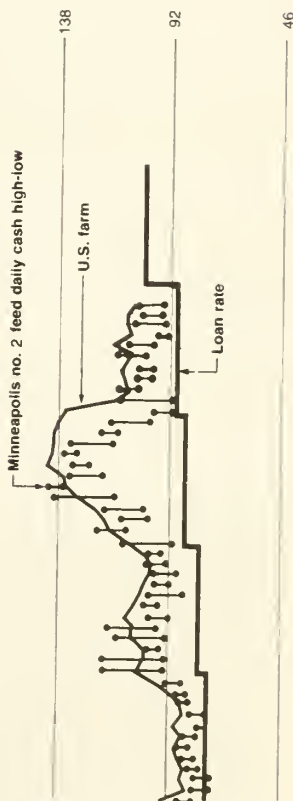


6
5
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3
O J A J O J A J O J A J O J A J O J A J
1978/79 1980/81 1982/83
Year beginning October

USDA
Neg. ERS 386-82(5)

Barley Prices

\$ per bushel
4
\$ per metric ton
184

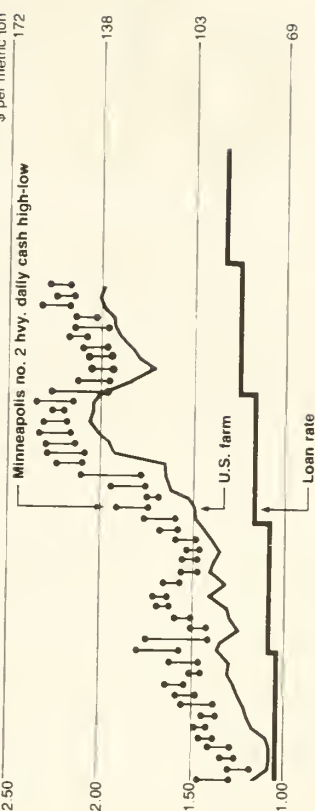


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J S D M J S D M J S D M J S D M J S D M
1978/79 1980/81 1982/83
Year beginning June

USDA
Neg. ERS 955-82(5)

Oat Prices

\$ per bushel
2.50
\$ per metric ton
172



2.00
1.50
1.00
0.50
0
J S D M J S D M J S D M J S D M J S D M
1978/79 1980/81 1982/83
Year beginning June

USDA
Neg. ERS 956-82(5)

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